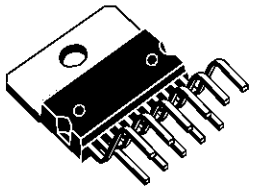
VISIT…

SGS-THOMSON MICROELECTRONICS

# TDA7262

## 20+20W STEREO AMPLIFIER WITH STAND-BY

- WIDE SUPPLY VOLTAGE RANGE
- HIGH OUTPUT POWER
  28+28W TYP. MUSIC POWER
  20+20W @ THD = 10%, $R_L$ = 4Ω, $V_S$ = 28V
- HIGH CURRENT CAPABILITY (UP TO 3.5A)
- STAND-BY FUNCTION
- AC SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

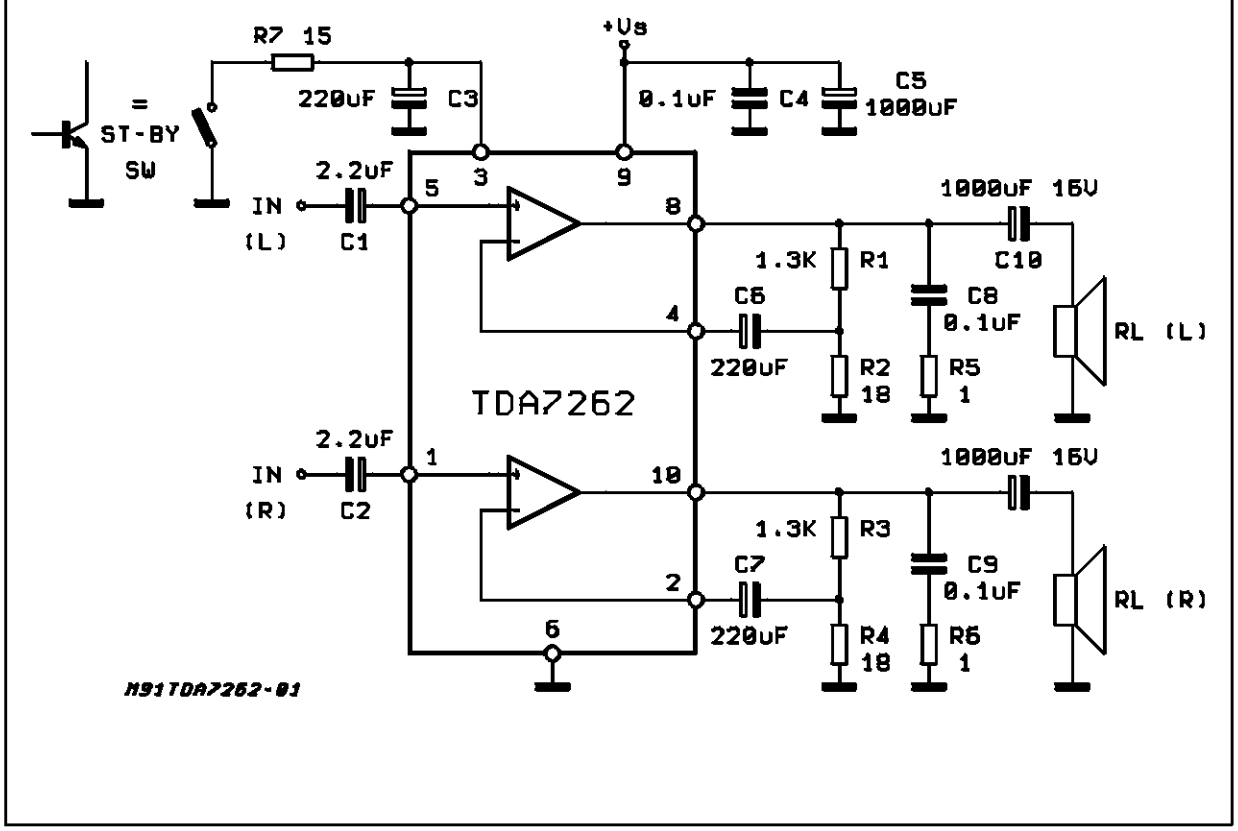


**MULTIWATT11**
**ORDERING NUMBER:** TDA7262

### DESCRIPTION

The TDA7262 is class AB dual Hi-Fi Audio power amplifier assembled in Multiwatt package, specilally designed for high quality stereo application as Hi-Fi music centers and TV sets.

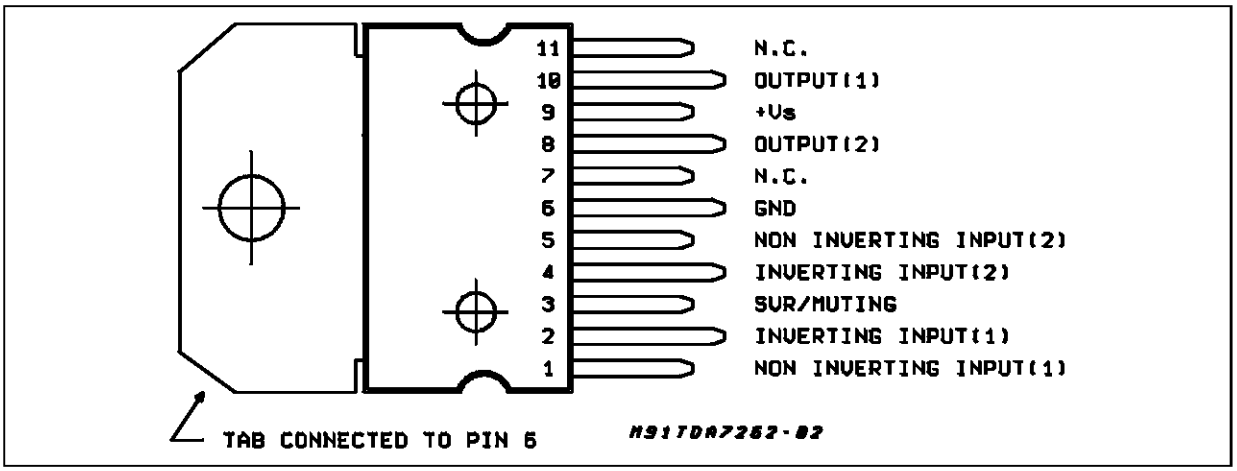
**Figure 1:** Stereo Application Circuit with Stand-By



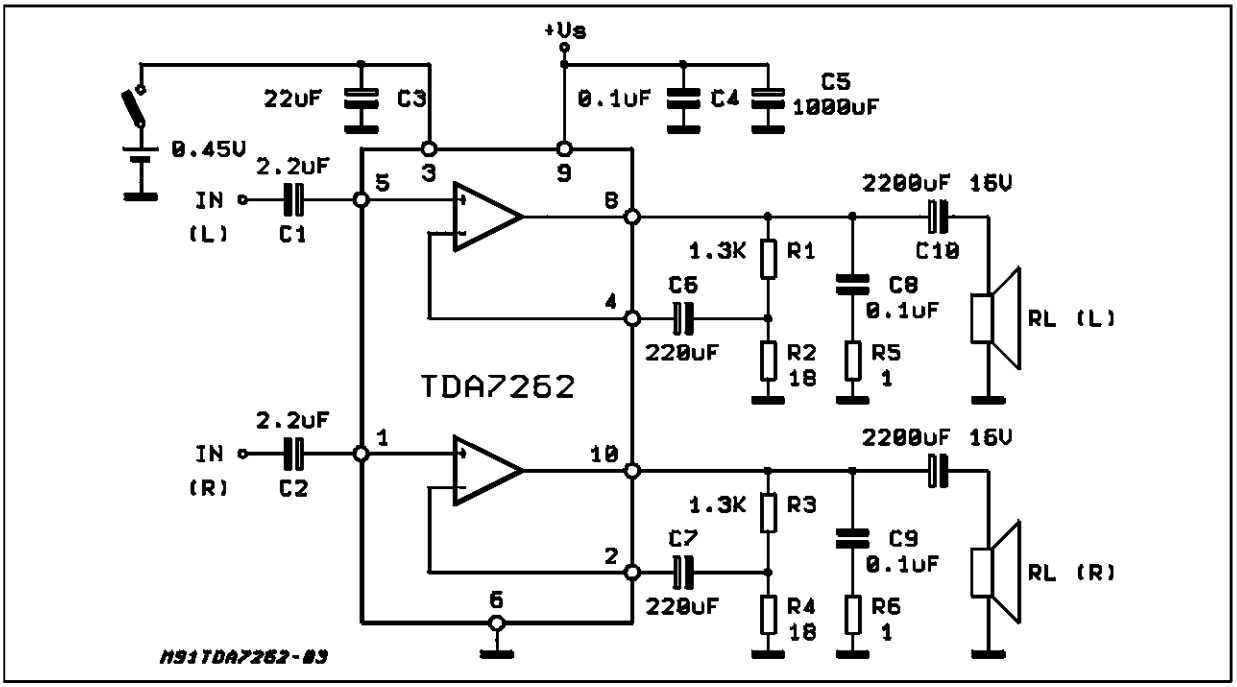
## ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_S$ | Supply Voltage | 35 | V |
| $I_O$ | Output Peak Current (repetitive f > 20Hz) | 3.5 | A |
| $I_O$ | Output Peak Current (non repetitive, t > 100µs) | 4.5 | A |
| $P_{tot}$ | Power Dissipation ($T_{case}$ = 70°C) | 30 | W |
| $T_{stg}$, $T_j$ | Storage and Junction Temperature | -40 to 150 | °C |

## PIN CONNECTION




## TEST CIRCUIT



## THERMAL DATA

| Symbol | Description | | Value | Unit |
|---|---|---|---|---|
| $R_{th\ j\text{-}case}$ | Thermal Resistance Junction-case | Max | 2.5 | °C/W |

**ELECTRICAL CHARACTERISTICS** (Refer to the stereo test circuit, $V_S$ = 28V; f = 1KHz; $T_{amb}$ = 25°C, unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $V_S$ | Supply Voltage | | 8 | | 32 | V |
| $V_O$ | Quiescent Output Voltage | $V_S$ = 32V | | 15.5 | | V |
| $I_d$ | Total Quiescent Current | $V_S$ = 28V<br>$V_S$ = 32V | | 65<br>70 | <br>120 | mA<br>mA |
| $P_O$ | Output Power (each channel) | Music Power STD rules (T = 1s)<br>$V_S$ = 32V; d = 10%; $R_L$ = 4Ω | | <br>28 | | <br>W |
| | | d = 10%<br>$R_L$ = 4Ω<br>$R_L$ = 8Ω | <br><br>10 | <br>22<br>13 | | <br>W<br>W |
| | | d = 1%<br>$R_L$ = 4Ω<br>$R_L$ = 8Ω | | <br>18<br>10 | | <br>W<br>W |
| d | Total Harmonic Distortion | f = 100Hz to 10KHz<br>$P_O$ = 0.1 to 14W; $R_L$ = 4Ω<br>$P_O$ = 0.1 to 8W; $R_L$ = 8Ω | | <br>0.2<br>0.1 | | <br>%<br>% |
| CT | Cross Talk | $R_L$ = 4Ω $R_S$ = 100Ω<br>f = 1KHz<br>f = 10KHz | | <br>60<br>50 | | <br>dB<br>dB |
| $V_i$ | Input Saturation Voltage | (Vrms) | 300 | | | mV |
| $R_i$ | Input Resistance | f = 1KHz; non inverting Input | 70 | 200 | | KΩ |
| $f_L$ | Low Frequency roll-off (-3dB) | $R_L$ = 4Ω | | 40 | | Hz |
| $f_H$ | High Frequency roll-off (-3dB) | $R_L$ = 4Ω | | 80 | | KHz |
| $G_V$ | Closed Loop Voltage Gain | f = 1KHz | 35.5 | 36 | 36.5 | dB |
| $\Delta G_V$ | Closed Loop Gain match | | | 0.5 | | dB |
| $e_N$ | Total Input Noise Voltage | A Curve; $R_S$ = 10KΩ | | 1.5 | | μV |
| | | f = 22Hz to 22KHz; $R_S$ = 10KΩ | | 2.5 | 8 | μV |
| SVR | Supply Voltage Rejection (each channel) | $R_S$ = 0 to 10KΩ; $f_r$ = 100Hz<br>$V_r$ = 0.5V | | 55 | | dB |
| $T_j$ | Thermal Shutdown Junction Temperature | | | 145 | | °C |

STAND-BY FUNCTION

| | | | | | | |
|---|---|---|---|---|---|---|
| $V_3$ | Stand-By Threshold | $V_S$ = 32V | 0.45 | 0.9 | | V |
| $A_M$ | Stand-By Attenuation | $V_S$ = 32V; $V_3$ < 0.45V | 60 | 100 | | dB |
| $I_M$ | Stand-By Quiescent Current | $V_S$ = 32V; $V_3$ < 0.45V | | 3 | 5 | mA |

## APPLICATION SUGGESTION

The recommended values of the components are those shown on application circuit of Figure 1. Different values can be used; the following table can help the designer.

| Component | Recomm. Value | Purpose | Larger than | Smaller than |
|---|---|---|---|---|
| R1 and R3 | 1.3KΩ | Close loop gain setting (*) | Increase of gain | Decrease of gain |
| R2 and R4 | 18Ω | | Decrease of gain | Increase of gain |
| R5 and R6 | 1Ω | Frequency stability | Danger of oscillations | |
| C1 and C2 | 2.2µF | Input DC decoupling | higher turn-on delay | - worse turn-ON pop<br>- higer low freq. cutoff. Increase of noise |
| C3 | 22µF (**) | - Ripple rejection<br>- Stand-by time constant | Increase of the Switch-on time | - Degradation of SVR<br>- worse turn-OFF pop by stand-by |
| C4 | 100nF | Supply setting | | Danger of oscillations |
| C5 | 1000µF | Supply setting | | worse turn-OFF pop |
| C6 and C7 | 220µF | Feedback input DC decoupling | | |
| C8 and C9 | 0.1µF | Frequency stability | | Danger of oscillations |
| C10 and C11 | 1000µF to 2200µF | Output DC decoupling | | Higher low-frequency cut-off |

(*) Closed loop gain must be higher than 26dB.
(**) 220µF in case of stand-by utilization.

**Figure 2:** Ouput Power vs. Supply Voltage

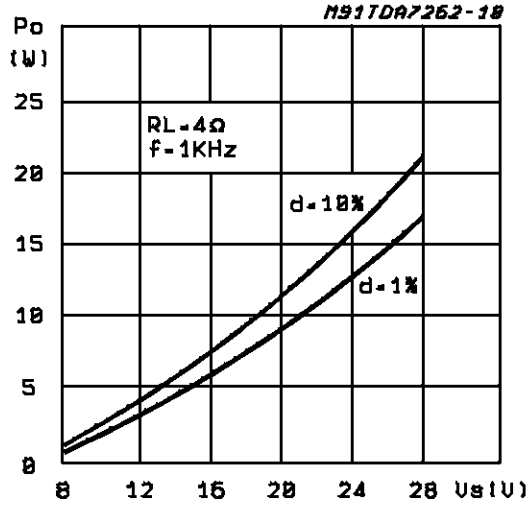



**Figure 3:** Ouput Power vs. Supply Voltage

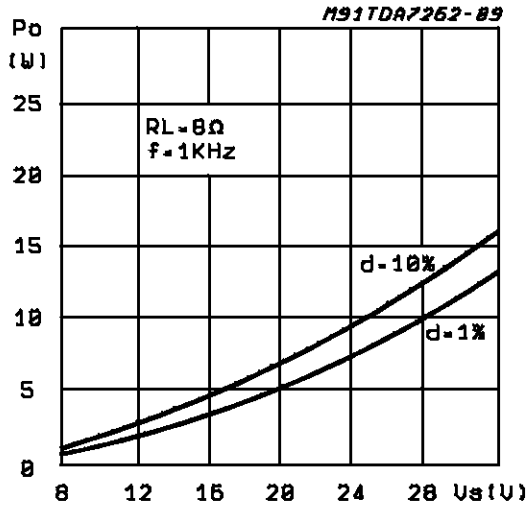


**Figure 4:** Distortion vs. Ouput Power

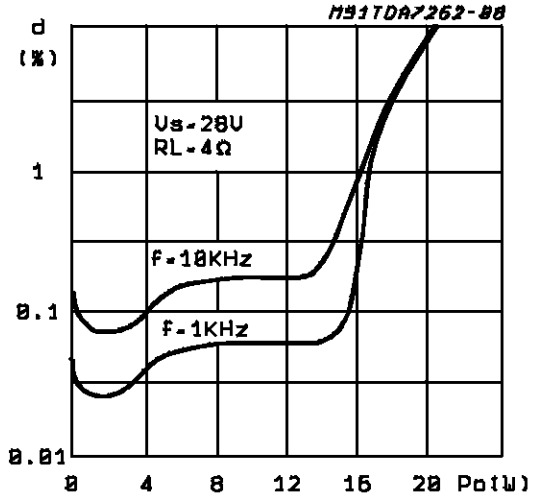



**Figure 5:** Distortion vs. Ouput Power

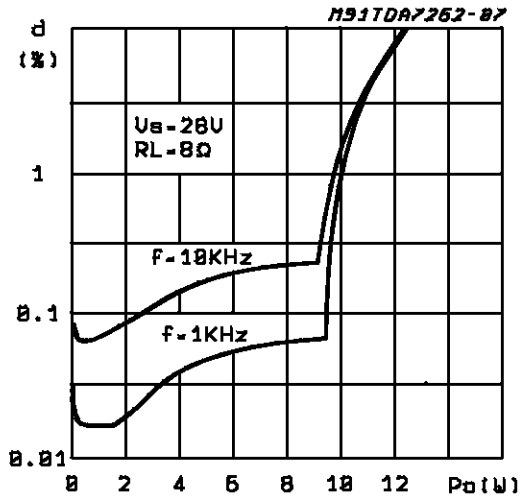



**Figure 6:** Quiescent Current vs. Supply Voltage

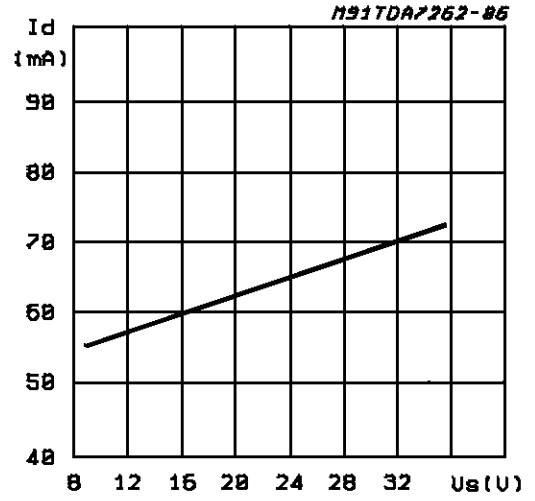



**Figure 7:** Supply Voltage Rejection vs. Frequency

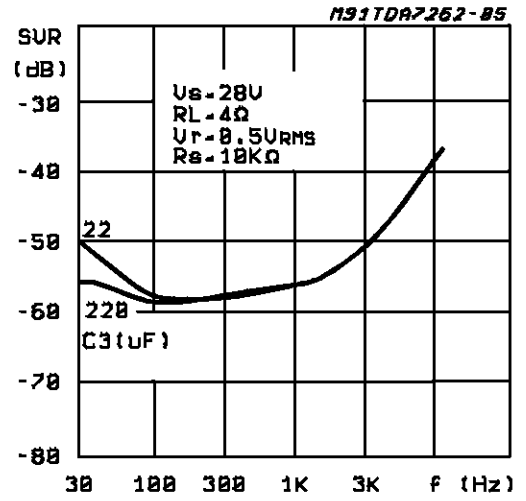



**Figure 8:** Output Attenuation vs. Vpin 3

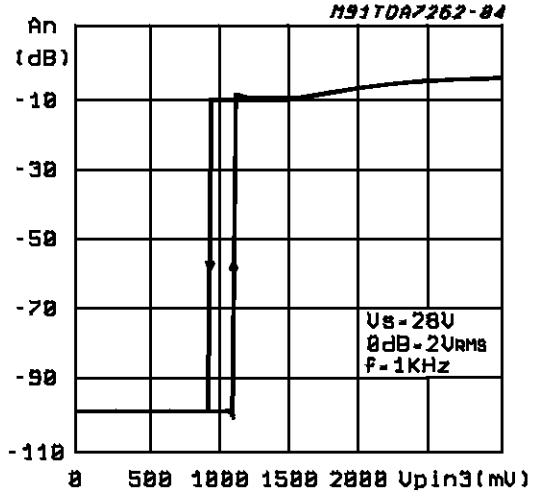



**Figure 9:** Total Power Dissipation & Efficiency vs. Output Power

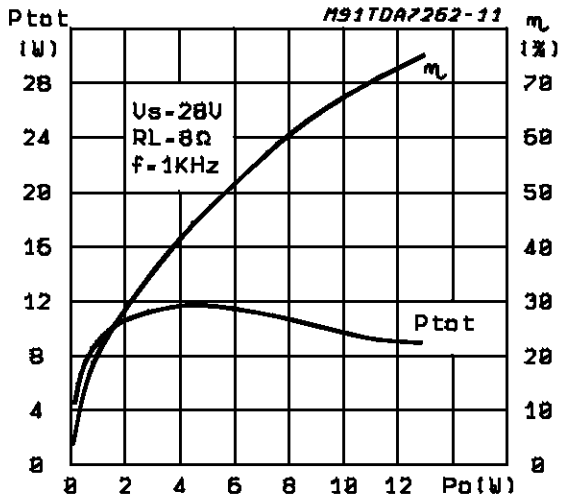


**Figure 11:** Total Power Dissipation & Efficiency vs. Output Power

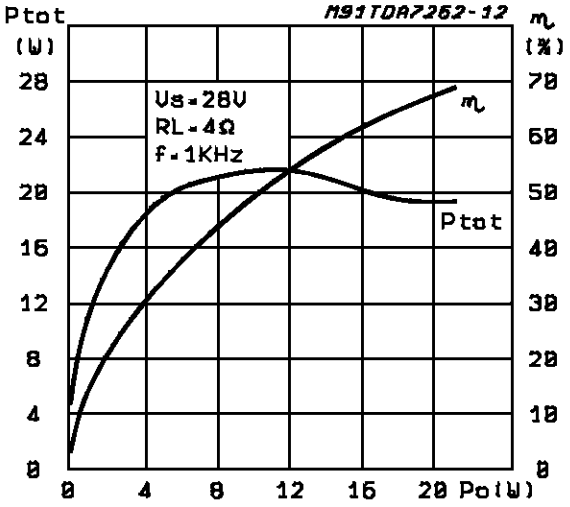
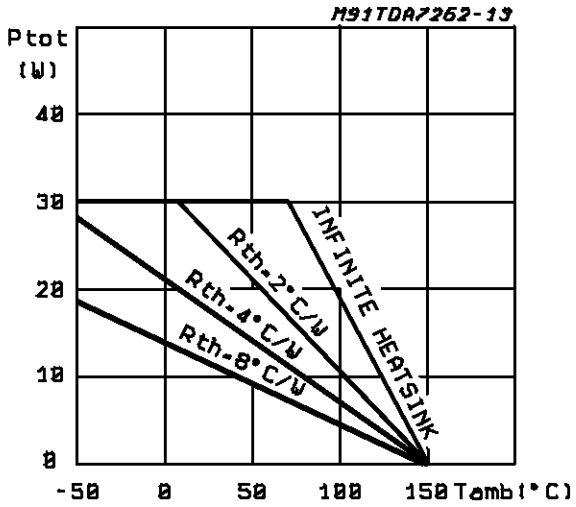



**Figure 12**




## BUILD-IN PROTECTION SYSTEMS

### Thermal shut-down

The presence of a thermal limiting circuit offers the following advantages:

1) an overload on the output (even if it is permanent), or an excessive ambient temperature can be easily withstood.
2) the heatsink can have a smaller factor of safety compared with that of a conventional circuit. There is no device damage in the case of excessive junction temperature; all that happens is that $P_O$ ( and therefore Ptot) and $I_O$ are reduced. The maximum allowable power dissipation depends upon the size of the external heatsink (i.e. its thermal resistance); Figure 12 shows this dissipable power as a function of ambient temperature for different thermal resistance.

### Short circuit (AC Conditions)

The TDA7262 can withstand accidental short circuits across the speaker made by a wrong connection during normal play operation.

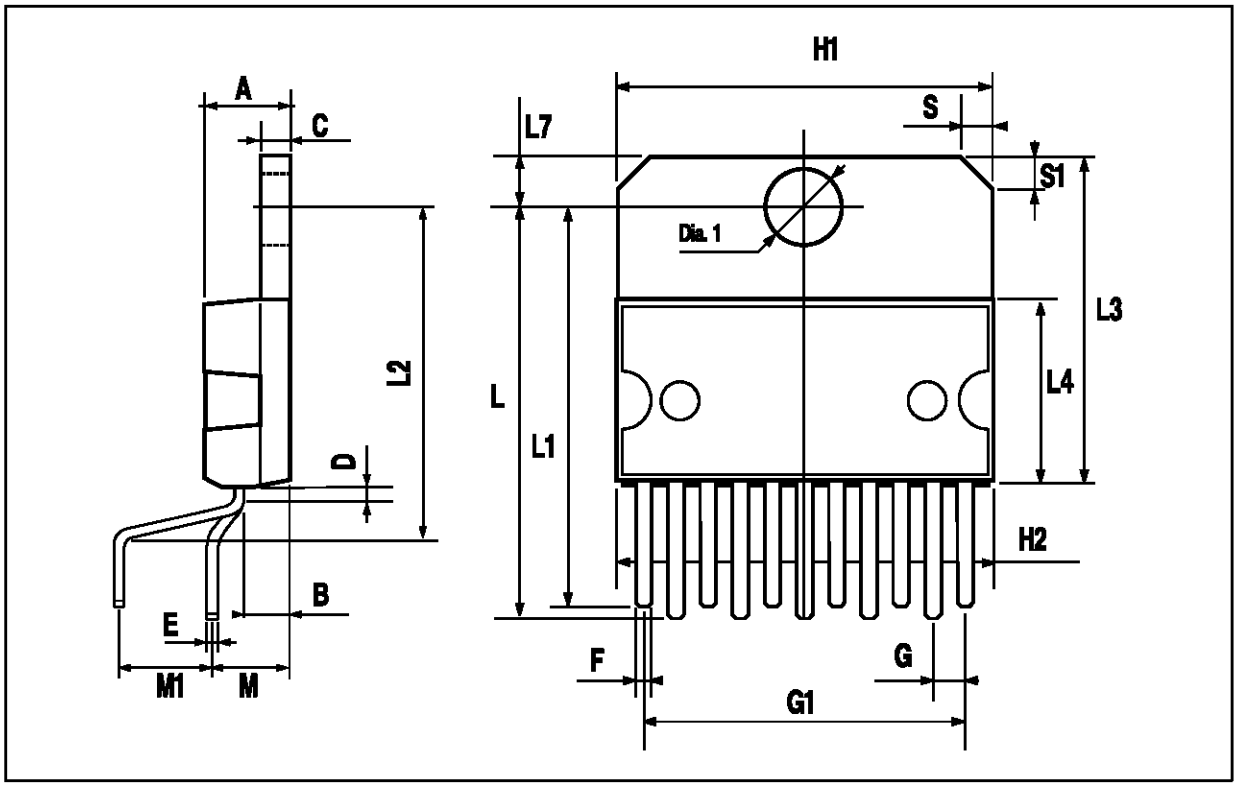
## MOUNTING INSTRCTIONS

The power dissipated in the circuit must be removed by adding an external heatsink.

Thanks to the MULTIWATT package attaching the heatsink is very simple, a screw or a compression spring (clip) being sufficient. between the heatsink and the package it is better to insert a layer of silicon grease, to optimize the thermal contact; no electrical isolation is needed between the two surfaces.

## MULTIWATT11 PACKAGE MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | | 5 | | | 0.197 |
| B | | | 2.65 | | | 0.104 |
| C | | | 1.6 | | | 0.063 |
| D | | 1 | | | 0.039 | |
| E | 0.49 | | 0.55 | 0.019 | | 0.022 |
| F | 0.88 | | 0.95 | 0.035 | | 0.037 |
| G | 1.45 | 1.7 | 1.95 | 0.057 | 0.067 | 0.077 |
| G1 | 16.75 | 17 | 17.25 | 0.659 | 0.669 | 0.679 |
| H1 | 19.6 | | | 0.772 | | |
| H2 | | | 20.2 | | | 0.795 |
| L | 21.9 | 22.2 | 22.5 | 0.862 | 0.874 | 0.886 |
| L1 | 21.7 | 22.1 | 22.5 | 0.854 | 0.87 | 0.886 |
| L2 | 17.4 | | 18.1 | 0.685 | | 0.713 |
| L3 | 17.25 | 17.5 | 17.75 | 0.679 | 0.689 | 0.699 |
| L4 | 10.3 | 10.7 | 10.9 | 0.406 | 0.421 | 0.429 |
| L7 | 2.65 | | 2.9 | 0.104 | | 0.114 |
| M | 4.25 | 4.55 | 4.85 | 0.167 | 0.179 | 0.191 |
| M1 | 4.73 | 5.08 | 5.43 | 0.186 | 0.200 | 0.214 |
| S | 1.9 | | 2.6 | 0.075 | | 0.102 |
| S1 | 1.9 | | 2.6 | 0.075 | | 0.102 |
| Dia1 | 3.65 | | 3.85 | 0.144 | | 0.152 |



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